Before the
Federal Communications Commission
Washington, D.C. 20054

In the Matter of	)	
	)	
Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-805 MHz Bands	)	PS Docket No. 13-87
	)	
National Public Safety Telecommunications Council Petition for Rulemaking on Aircraft Voice Operations at 700 MHz	)	RM-11433
	)	
National Public Safety Telecommunications Council Petition for Rulemaking to Revise 700 MHz Narrowband Channel Plan	)	RM-11433
	)	
Region 24 700 MHz Regional Planning Committee Petition for Rulemaking	)	WT Docket No. 96-86 PS Docket No. 06-229
	)	
State of Louisiana Petition for Rulemaking	)	RM-11577

COMMENTS OF THE COMMONWEALTH OF VIRGINIA

The Commonwealth of Virginia, Department of State Police ("Commonwealth"), by its counsel, hereby submits comments on behalf of its Statewide Agencies Radio System ("STARS") in response to the August 22, 2016 Order on Reconsideration and Further Notice of Proposed Rulemaking (FCC 16-111) in the above proceeding, inviting comments in the Further Notice of Proposed Rulemaking on amendments to the Commission's rules to allow for the expanded use of non-trunked mobile repeaters on State and Reserve Channels, as well as other matters.

INTRODUCTION

STARS is a twenty-one state agency public safety grade statewide integrated voice and data radio system. STARS uses digital trunked VHF narrow band land mobile radio

technology for the infrastructure and relies heavily on 700 MHz digital vehicular repeater systems (DVRS) in approximately 3,200 vehicles to support portable radio public safety grade communications within the network.

In 2004 the Commonwealth entered into a contract with Motorola to design, construct and implement a new comprehensive statewide public safety communications system, and the current STARS system was designed and built under Motorola's guidance. STARS is a statewide shared land mobile radio system utilizing Part 90 public safety channels, Part 22 VHF paging channels, and Part 80 VHF maritime channels. The Commonwealth applied for various waivers from the Commission to acquire and operate the Part 22 and Part 80 channels, which the Commission has granted. In the middle of the Commonwealth's construction of STARS, the Commission adopted new rules creating a new consolidated band of public safety narrowband channels, and prohibiting deployment of new narrowband operations outside of that range.[1] The Commonwealth obtained a waiver from the Commission to continue deployment of STARS at that time.[2]

AMENDMENT OF THE TRUNKING RULES

The Commonwealth strongly supports an amendment of Section 90.537 of the Commission's rules to specifically exempt vehicular repeater systems (VRS) and other portable-to-portable and mobile-to-mobile only networks from any trunking requirement. Trunking is not feasible today in VRS systems as a practical matter. Project 25 for instance has no accommodation for trunking in direct subscriber to subscriber only networks.

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[1] Second Report and Order, 22 FCC Rcd 15289 (July 31, 2007)

[2] Order, FCC 07-195, 22 FCC Rcd at 20293 (November 14, 2007)

Section 90.537 of the Commission's rules establishes trunking requirements for narrowband systems in the 700 MHz band to ensure efficient use of the spectrum.

A trunked system uses multiple channel pairs in conjunction with a computer which automatically assigns a user the first available channel or places the user in a queue to be served in turn. By permitting idle channels to be assigned on an as-needed basis, a trunked system can increase the utilization of radio channels. Trunking ensures highly efficient use of available radio spectrum and virtually eliminates the delay traditionally experienced when trying to obtain a clear radio channel using a non-trunked system.

STARS believes that under Commission rules adopted in 2001, before STARS was designed and built, state channels and mobile units on interoperable channels were exempt from this trunking requirement.[3] When STARS first became operational in 2006, the 96 channel 700 MHz Futurecom digital vehicular repeater used by STARS had been certified for use by the Commission without consideration of trunking. It was certified to be interconnected with a VHF trunked mobile (in the case of the version STARS uses) but not to implement trunking on 700 MHz in and of itself. The link between the repeater and portable could only be conventional at 700 MHz.

[3] Fourth Report and Order, WT Docket No 96-86, FCC 01-10, 23 CR 448, 16 FCC Rcd 2020 (January 17, 2001) "We believe that the small benefit gained in spectrum efficiency does not outweigh the disadvantages associated with mandatory trunking, specifically the expense of added cost, weight, and complexity to the [mobile] units "Id at ¶36. See also, Seventh NPRM, 20 FCC Rcd at 861, ¶ 76-78.

In 2013, the Commission clarified its rules to provide that the trunking requirement applies to State Channels.[4] The Commission subsequently effectively clarified its rules to provide that the trunking requirement applies to the Reserve Channels also.[5] Until these 2013-2014 clarifications were brought to STARS' attention by the Region 20 700 MHz Planning Committee when STARS sought to have former reserve channels assigned to it, STARS was unaware that the trunking requirements could apply to a system of subscriber to subscriber communications which does not employ infrastructure (communications going through towers). STARS' consultant, Motorola, which designed the STARS system and procured its equipment, was apparently also not aware in 2004-2006 when the system was designed and first became operational, that the trunking rule in Section 90.537 might apply to DVRS, and did not subsequently notify STARS of this requirement.

While the Commonwealth appreciates the efficiency principles for trunking, and its STARS land mobile radio network is generally a trunked system, one aspect of STARS is not trunked: direct subscriber to subscriber communications.[6]

In the STARS land mobile radio network, a cross-banded VHF mobile to 700 MHz portable DVRS is used in approximately 3,200 first responders (and some public service) vehicles, providing good quality and cost effective portable radio coverage.

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[4] Seventh Report and Order, PS Docket No. 13-87, FCC 13-40, 57 CR 1637, 28 FCC Rcd 04783 ¶29 (April 1, 2013).

[5] Report and Order, PS Docket No. 13-87, FCC 14-172, 61 CR 611 , 29 FCC Rcd. 13283, ¶ 34 et seq. (October 14, 2014).

[6] This is true of Project 25 based 700 MHz trunking generally; since trunking presumes infrastructure use (communications going through towers), direct user to user communications in the field are not trunked.

STARS has been in operation since 2006, and its trunked infrastructure covers 97% of Virginia's population (with over 90% geographical coverage). The radio coverage of the DVRS is substantially identical to the STARS VHF infrastructure, and the Commonwealth's interim substantial service filing for STARS state channels has been approved. STARS has encountered no problems in its statewide DVRS operations during the last ten years, from 2006 to date, which could be attributed to a lack of trunking.

When STARS was implemented in 2006, there was no trunked vehicular repeater available from any manufacturer and approved for U.S. use; and to the best of the Commonwealth's knowledge, that is still true today in 2016, ten years later. Today in 2016 there is also still no Project 25 (Phase 1 or the latest Phase 2) specification for a vehicular repeater, conventional or trunked.[7]

The Futurecom DVR model used by STARS (certified for use by the Commission at 700 MHz) is designed for 96 channel operation and does not include a trunking capability.

Given this history, and the fact that trunking has always assumed a fixed infrastructure, the Commonwealth did not realize until recently that Section 90.537 might apply to its DVRS. Project 25 does not facilitate subscriber to subscriber trunked operations, since trunking thus far requires an infrastructure. STARS believed in good

[7] In its recent Report and Order in Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations Report and Order, PS Docket No. 13-87, FCC 14-172, 61 CR 611, 29 FCC Rcd. 13283 (October 14, 2014), ¶4-12 the Commission noted the lack of standards for 6.25 kilohertz unit-to-unit communications and vehicular repeaters as a factor in eliminating the 6.25 kilohertz narrowbanding requirement, along with the need for flexibility in spectrum use. The lack of standards for DVRS and user to user communications trunking poses a comparable problem.

faith that the trunking requirements of Section 90.537 did not apply to its DVRS that uses no 700 MHz fixed transmitters to support subscriber to subscriber communications. Once STARS became aware of the Commission's recent interpretations in this area, STARS requested a waiver. [8]

The Commission issued an Order and Notice of Proposed Rulemaking to Facilitate the Use of Vehicular Repeater Units[9] in 2013, noting the importance of vehicular repeater units for public safety operations, and exploring whether additional frequencies should be made available. The existence of that proceeding and the multiple public safety comments in that proceeding on the value of vehicular repeater units such as DVRS and the need for additional frequencies, reflects the importance of vehicular repeater units in public safety operations in the field.

In response to the Commission's request for comments on amendment of Section 90.537 to specifically exempt VRS from the 700 MHz narrowbanding trunking requirement, the Commonwealth strongly supports such an amendment, but notes that it should apply not only to vehicular repeaters, but any other portable to portable or mobile to mobile networks utilizing these frequencies. It should also not apply to degraded modes of operations that a 700 MHz infrastructure can be designed to support when trunking fails and reverts to conventional operations.

Mobile networks of VRS and portable units have become of increasing importance in the public safety community. The need for communications with public safety

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[8] Request for Waiver filed by the Commonwealth of Virginia, Department of State Police (Jan. 29, 2015).

[9] PS Docket No. 13-229 (September 16, 2013).

officers, out of their vehicles, whether such officers are inside office or apartment buildings or in rural areas, cannot be questioned. High quality portable radio communications signals with an extended range facilitated by a VRS are critically important to maintain communications with police, fire and rescue personnel in the field. Having a portable radio for communications provides a much greater degree of safety whenever a law enforcement officer is outside of his or her patrol vehicle.

In response to the Commission's request for comments on the costs and benefits of trunking as applied to VRS, the Commonwealth believes that i) the lack of P25 standards for VRS trunking, and ii) the lack of trunked VRS units available today in commercial production, clearly indicate that any consideration of mandating VRS trunking must be deferred to a date in the distant future. If P25 standards are in the future established for trunking and commercially available trunked VRS units are also available, then a prospective trunking standard for new VRS systems might be feasible, after existing VRS systems have aged enough to need replacement.

In theory, there could be a spectrum efficiency advantage to trunking VRS units; but with no P25 standards and no commercially available VRS units, and with a very high cost of replacement for existing VRS systems (and no obvious sources of funding), the practical aspects must outweigh the theoretical. The Commonwealth has been advised by its DVRS manufacturer, Futurecom, that existing units cannot be reprogrammed or retrofitted, but would need to be completely replaced. The cost of acquiring new VRS units (if trunked units were available) and the implementation cost of scheduling installation and replacement of approximately 3,200 DVRS units alone (each

including a mobile radio, portable radio, and repeater), in a working public safety fleet of STARS and other agency vehicles, would be a massive effort, again with no source of funding available.

Shutting down the use of the non-trunked VRS units in the field today is simply not practical. A VRS unit in a vehicle is effectively used to extend radio coverage to a portable unit carried by an officer in the field. To effectively replace VRS coverage statewide by an infrastructure (tower) system would require many times the existing number of tower sites in Virginia , at a cost of millions of dollars per completed tower sites (if it were even practicable to acquire numerous transmitter sites statewide). Using a VRS is effectively the only practical way to obtain true geographic statewide coverage with a portable radio system. At the same time, no manufacturer has yet to commercially manufacture trunked VRS, so the current non-trunked VRS systems need to be approved for use on public safety channels, or significant gaps in public safety coverage will occur.

Implementation of a trunking requirement for VRS in the distant future, as existing equipment is retired, might be possible, but it is not a practical solution now. At present, use of non-trunked VRS and portable units to maintain public safety communications in the field is a critical public safety necessity and is the most efficient use of the spectrum under the circumstances.

With respect to interoperability, the Commonwealth supports the Commission's codification of interoperability standards for future sets and capabilities, but is concerned that any such new codified future sets and capabilities must be phased in gradually, to

allow public safety users to absorb the costs of new equipment only as old equipment is phased out.

With respect to the Commission's inquiry on specific barriers to interoperability among manufacturers or agencies, the Commonwealth would suggest requiring common code plugs to program radios among all the vendors.

CONCLUSION

For the foregoing reasons, the Commonwealth respectfully requests that the Commission amend Section 90.537 and other rules as needed to permit non-trunked use of 700 MHz channels by DVRS and other portable to portable or mobile to mobile devices.

Respectfully submitted,

Commonwealth of Virginia
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CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of October, 2016, a copy of the foregoing Comments of the Commonwealth of Virginia was sent by email to john.evanoff @fcc.gov.

Peter E. Broadbent, Jr.

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